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PATENT APPLICATION TRANSMITTAL LETTER  
(Large Entity)Docket No.  
INTL-0455-US (P9809)

## TO THE ASSISTANT COMMISSIONER FOR PATENTS

Transmitted herewith for filing under 35 U.S.C. 111 and 37 C.F.R. 1.53 is the patent application of:

ROLAND M. MORLEY

For: DUAL CHANNEL IMAGING DEVICE

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08/31/00  
09/652431

Enclosed are:

Certificate of Mailing with Express Mail Mailing Label No. EL445651492US.

One (1) sheets of drawings.

A certified copy of a application.

Declaration  Signed.  Unsigned.

Power of Attorney

Information Disclosure Statement

Preliminary Amendment

Other: Recordation Form Cover Sheet; Assignment and check for \$40.

## CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	24	- 20 =	4	x \$18.00	\$72.00
Indep. Claims	3	- 3 =	0	x \$78.00	\$0.00
Multiple Dependent Claims (check if applicable)					\$0.00
				<b>BASIC FEE</b>	\$690.00
				<b>TOTAL FILING FEE</b>	\$762.00

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Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: August 31, 2000


  
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INTL-0455-US  
(P9809)

**APPLICATION**

**FOR**

**UNITED STATES LETTERS PATENT**

**TITLE: DUAL CHANNEL IMAGING DEVICE**

**INVENTOR: ROLAND M. MORLEY**

Express Mail No.: EL445651492US

Date: August 31, 2000

DUAL CHANNEL IMAGING DEVICE

Background

This invention relates generally to imaging devices and particularly to optical systems for imaging devices.

A wide variety of imaging devices are available 5 including cameras, telescopes and microscopes as examples. In many cases, an imaging array is integrated with these optical devices to record an image produced by the optical device.

Sometimes a zoom lens is provided to enable different 10 fields of view. For example, a narrow field of view and a wide field of view may be obtained by the same zoom lens. Thus, the zoom lens may selectively produce an image with a narrow or wide field of view. The image from the zoom lens may be captured by an imaging array at the same time it is 15 viewed by the user through a viewfinder.

However, the use of a zoom lens results in substantially increased cost for the imaging device. This is because of the relative cost of the zoom lens compared to fixed field of view lenses. Zoom lenses are more 20 expensive to manufacture because there are optical moving parts that may increase the need for precision components and mounting surfaces.

Thus, there is a need for an imaging device which provides for different fields of view without incurring the cost of a zoom lens.

Brief Description of the Drawing

5 Figure 1 is a schematic depiction of one embodiment of the present invention.

Detailed Description

Referring to Figure 1, an imaging device 10 may be a digital camera, a telescope, a microscope or other imaging 10 device. The viewer, indicated as E, views the received images through an eyepiece 32 that may be part of a direct viewfinder. A focus screen 30 receives an image from a relay lens 28.

Two different optical paths N and W are utilized in 15 accordance with one embodiment of the present invention. However, in other cases, more than two optical paths may be utilized.

The first optical path N includes an optical system 36 having a shutter 12, an adjustable focus, relatively narrow 20 field of view lens 14, and a mirror 16. Instead of using a spherical lens as the lens 14, other optical devices including a flat or Fresnel lens may be utilized. A fixed or adjustable focus manual lens may be used as the lens 14. If an adjustable focus lens is used, it may be a manual or 25 autofocus lens.

The lens 14 provides a relatively narrow field of view and may be moved along the optical path N to adjust its focus. The image from the lens 14 is reflected by the mirror 16 to an infrared (IR) filter 22 and an imaging array 20.

5 While a digital imaging array 20 is illustrated, any recording media may be utilized including conventional film. The imaging array 20 may, for example, be a complementary metal oxide semiconductor (CMOS) sensor or a charge coupled device (CCD) sensor, as two examples.

10 A second optical path W includes an optical system 38 having a shutter 24, a relatively wide field of view lens 26 and a beamsplitter 18. A fixed or adjustable focus manual lens may be used as the lens 26. If an adjustable 15 focus lens is used, it may be a manual or autofocus lens. When the shutter 24 is passing light, the optical path W provides light that is reflected by the beamsplitter 18 to the imaging array 20. The beamsplitter 18 may be a parallel plate or cubic beamsplitter as two examples.

20 In one embodiment of the present invention, only one of the paths N or W is active at any one time. That is, the state of the shutters 12 and 24 may be controlled by a control device 34 that may receive user inputs. The user may select either a narrow or a wide field of view. If the user 25 selects a narrow field of view, the shutter 12 in the optical path N is opened and conversely if the user selects a wide

field of view, the shutter 24 in the optical path W is opened. However, in one embodiment, only one of the shutters 12 or 24 is opened or passing light at any given time.

The active light path N or W provides light not only to the imaging array 20 but also to the eyepiece 32 for viewing by the user. In the case of the light path N, light is reflected by the beamsplitter 18 to the eyepiece 32. In the case of the light path W, light is passed by the beamsplitter 18 to the eyepiece 32. The beamsplitter 32 may pass 50% of the incident light in one embodiment of the invention.

The screen 30 may be used in a manual focus system. The lenses 28 and 32 adjust the resulting image for viewing by the user's eye E.

Thus, a dual channel system enables the user to select either a narrower or wider field of view. The images captured through the selected optical path may be recorded on the imaging array 20 while being viewed through the eyepiece 32. In this way, a selectable field of view may be obtained without the need for a zoom lens. In particular, a narrower or wider field of view may be selected without the need for moving lenses or optical systems in some embodiments.

As an example, the imaging device 10 may be a camera and the lens 14 may be a macro lens for close-up viewing and the lens 26 may be a conventional lens. As another

example, one of the lenses 14 or 26 may have a different magnification than the other lens 14 or 26. Whichever optical system 36 or 38 is selected, the captured image is available for viewing by the user indicated at E at the

5 same time.

While the present invention has been described with respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended

10 claims cover all such modifications and variations as fall within the true spirit and scope of this present invention.

What is claimed is:

1       1. An imaging device comprising:  
2            an imaging array;  
3            a first optical system to selectively provide an  
4       image to said array;  
5            a second optical system to selectively provide an  
6       image to said array; and  
7            an eyepiece to view the image selectively  
8       provided to said array from one of said first or second  
9       optical systems.

1       2. The imaging device of claim 1 wherein said  
2       imaging device is a camera.

1       3. The imaging device of claim 1 wherein said  
2       imaging device is a microscope.

1       4. The imaging device of claim 1 wherein said  
2       imaging device is a telescope.

1       5. The imaging device of claim 1 wherein said  
2       imaging array is a digital sensor.

1       6. The imaging device of claim 1 wherein said first  
2       optical system includes a shutter and said second optical  
3       system includes a shutter.

1           7. The imaging device of claim 6 wherein said  
2 shutters are controlled so that only one of said shutters  
3 is open at a time.

1           8. The imaging device of claim 7 wherein a  
2 controller enables the user to select one of said shutters  
3 to pass light.

1           9. The imaging device of claim 8 including a  
2 beamsplitter that causes light from each optical system to  
3 be passed both to the imaging array and said eyepiece.

1           10. The imaging device of claim 1 wherein said first  
2 optical system includes a lens with a narrower field of  
3 view and said second optical system includes a lens with a  
4 wider field of view.

1           11. The imaging device of claim 1 wherein said first  
2 optical system includes a first lens and said second  
3 optical system includes a second lens, said first lens  
4 having a higher magnification than said second lens.

1           12. A method comprising:  
2                   providing a first image to an imaging array along  
3                   a first light path;

4 providing a second image to said imaging array  
5 along a second light path; and  
6 enabling selective viewing of one of said images.

1           13. The method of claim 12 including enabling a  
2 selected image to be simultaneously viewed by said user and  
3 captured by said imaging array.

1                   14. The method of claim 12 including selectively  
2 shuttering one of said first and second optical paths.

1            15. The method of claim 14 including selectively  
2 closing one of said first and second optical paths while  
3 opening the other of said first and second optical paths.

1               16. The method of claim 12 including providing a  
2 different field of view along said first and second optical  
3 paths.

1                   17. The method of claim 12 including a different  
2 magnification along each of said first and second paths.

1           18. The method of claim 12 including enabling a user  
2 to select one of said paths to pass an image to said  
3 eyepiece and said imaging array.

1           19. The method of claim 12 including splitting the  
2       light from each of said paths to cause part of the light to  
3       go to said imaging array and part of said light to go to  
4       said eyepiece.

1           20. A camera comprising:  
2               a first optical path having a lens with a first  
3       field of view;  
4               a second optical path including a lens with a  
5       second field of view different from said first field of  
6       view;  
7               an image capture device to selectively receive an  
8       image from one of said first and second optical paths; and  
9               an eyepiece to display the image received by said  
10      image capture device.

1           21. The camera of claim 20 wherein said first optical  
2       path includes a shutter and said second optical path  
3       includes a shutter.

1           22. The camera of claim 21 wherein said shutters are  
2       controlled so that only one of said shutters is open at a  
3       time.

1           23. The camera of claim 22 including a controller to  
2 enable the user to select one of said shutters to pass  
3 light.

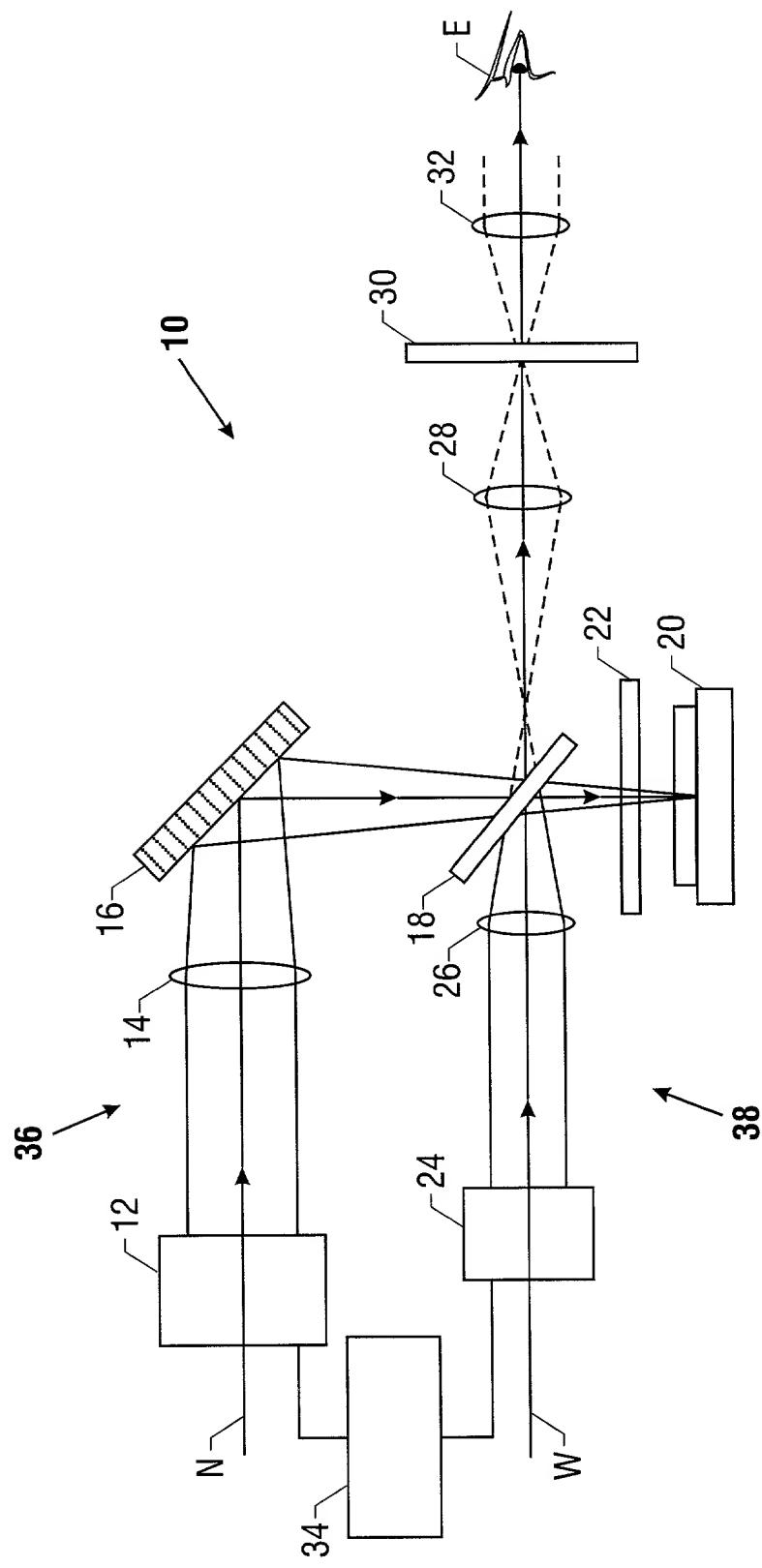
1           24. The camera of claim 23 including a beamsplitter  
2 to enable light from each optical path to be passed both to  
3 the imaging array and said eyepiece.

## DUAL CHANNEL IMAGING DEVICE

### Abstract of the Disclosure

An imaging device may include two channels, for example each with different magnification or fields of view as two examples. The user may select one of the channels and the image captured through that channel may be both viewed through a viewfinder and recorded on an imaging array or other recording media.

FIG. 1



DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**DUAL CHANNEL IMAGING DEVICE**

the specification of which

X

is attached hereto.  
 was filed on \_\_\_\_\_ as  
 United States Application Number \_\_\_\_\_  
 or PCT International Application Number \_\_\_\_\_  
 and was amended on \_\_\_\_\_  
 (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):			Priority Claimed	
Number	(Country)	(Day/Month/Year Filed)	Yes	No
Number	(Country)	(Day/Month/Year Filed)	Yes	No
Number	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under title 35, United States Code, Section 119(e) of the United States provisional application(s) listed below:

(Application Number)	(Filing Date)
(Application Number)	(Filing Date)

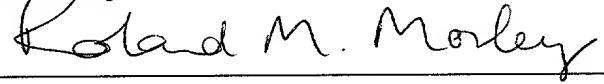
I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Number)	Filing Date	(Status-patented, pending, abandoned)
(Application Number)	Filing Date	(Status-patented, pending, abandoned)

I hereby appoint Timothy N. Trop, Reg. No. 28,994; Fred G. Pruner, Jr., Reg. No. 40,779 and Dan C. Hu, Reg. No. 40,025 my patent attorneys, of TROP, PRUNER & HU, P.C., with offices located at 8554 Katy Freeway, Ste. 100, Houston, TX 77024, telephone (713) 468-8880, and Mirho, Charles A.; Registration No. 41,199; Novakoski, Leo V.; Registration No. 37,198; Reynolds, Thomas C.; Registration No. 32,488; Seddon, Kenneth M.; Registration No. 43,105; Seeley, Mark; Registration No. 32,299; Skabrat, Steven P.; Registration No. 36,279; Skaist, Howard A.; Registration No. 36,008; Su, Gene I.; Registration No. 45,140; Wells, Calvin E.; Registration No. 43,256; Werner, Raymond J.; Registration No. 34,752; Winkle, Robert G.; Registration No. 37,474; and Young, Charles K.; Registration No. 39,435 my patent attorneys, of INTEL CORPORATION with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Send correspondence to Timothy N. Trop, TROP, PRUNER & HU, P.C., 8554 Katy Freeway, Ste. 100, Houston, TX 77024 and direct telephone calls to Timothy N. Trop, (713) 468-8880.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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